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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,670	11/18/2003	Sungkwon C. Hong	M4065.0982/P982	2308
24998	7590	10/24/2005	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			NGUYEN, THINH T	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			2818	

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,670

Applicant(s)

HONG, SUNGKWON C.

Examiner

Thinh T. Nguyen

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12 is/are allowed.
- 6) ☐ Claim(s) 13-21 is/are rejected.
- 7) ☐ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED OFFICE ACTION

1. Applicant election of claims 9-21 without traverse for prosecution in the communication with the Office on 8/18/2005 is acknowledged.

Specification

2. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant cooperation is requested in correcting any errors of which the applicant may become aware in the specification.

Claim Objection

3. Claims 15 is objected to since the Applicant claimed that the second conductive layer is formed of undoped polysilicon. Since the capacitor electrodes or plate in semiconductor can be made of a single layer by doping the undoped polysilicon layer or composite layer of doped and undoped polysilicon and; it is impossible from the recitation of the claim to interpret what features the Applicant wants to claim because the specification does not provide any disclosure about the advantage of using a non-doped polysilicon capacitor electrode layer.

Correction or clarification is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(a/b/e) that form the basis for the rejections under this section made in this office action.

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 13,14, 18-21 rejected under 35 U.S.C. 102(b) as being anticipated by Divakaruni et al. (U.S. Patent 6,429,068).

REGARDING CLAIM 13

Divakaruni discloses (the abstract, fig 1,fig 2, fig 3, fig 4) a method of forming a memory cell, comprising the steps of: forming a transistor including a gate fabricated on a semiconductor substrate and including a source/drain region in the semiconductor substrate disposed adjacent to the gate, the step of forming the transistor including providing a silicide region (fig 4 region 252,column 8 lines 48-50) of the gate; and forming a capacitor adjacent the transistor by providing a first conductive layer (fig 4 layer 230), a dielectric layer (fig 4 layer

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226) and a second conductive layer, (fig 4 layer 220) wherein the steps of providing the first conductive layer, the dielectric layer and the second conductive layer are conducted prior to the step of providing the silicide region of the gate.

REGARDING CLAIM 14.

Divakaruni discloses (the abstract, fig 4 layer 230, column 2 lines 5-10, column 7 line 41) a method for fabricating DRAM wherein the first conductive layer of the capacitor is formed of doped polysilicon layer

REGARDING CLAIM 18,20,21

Divakaruni discloses (the abstract, fig 4) a method for fabricating a DRAM device that uses MOSFET transistor.

REGARDING CLAIM 19

Divakaruni discloses (in column 1 lines 67,column 2 line 1) a method for fabricating DRAM that use silicon substrate.

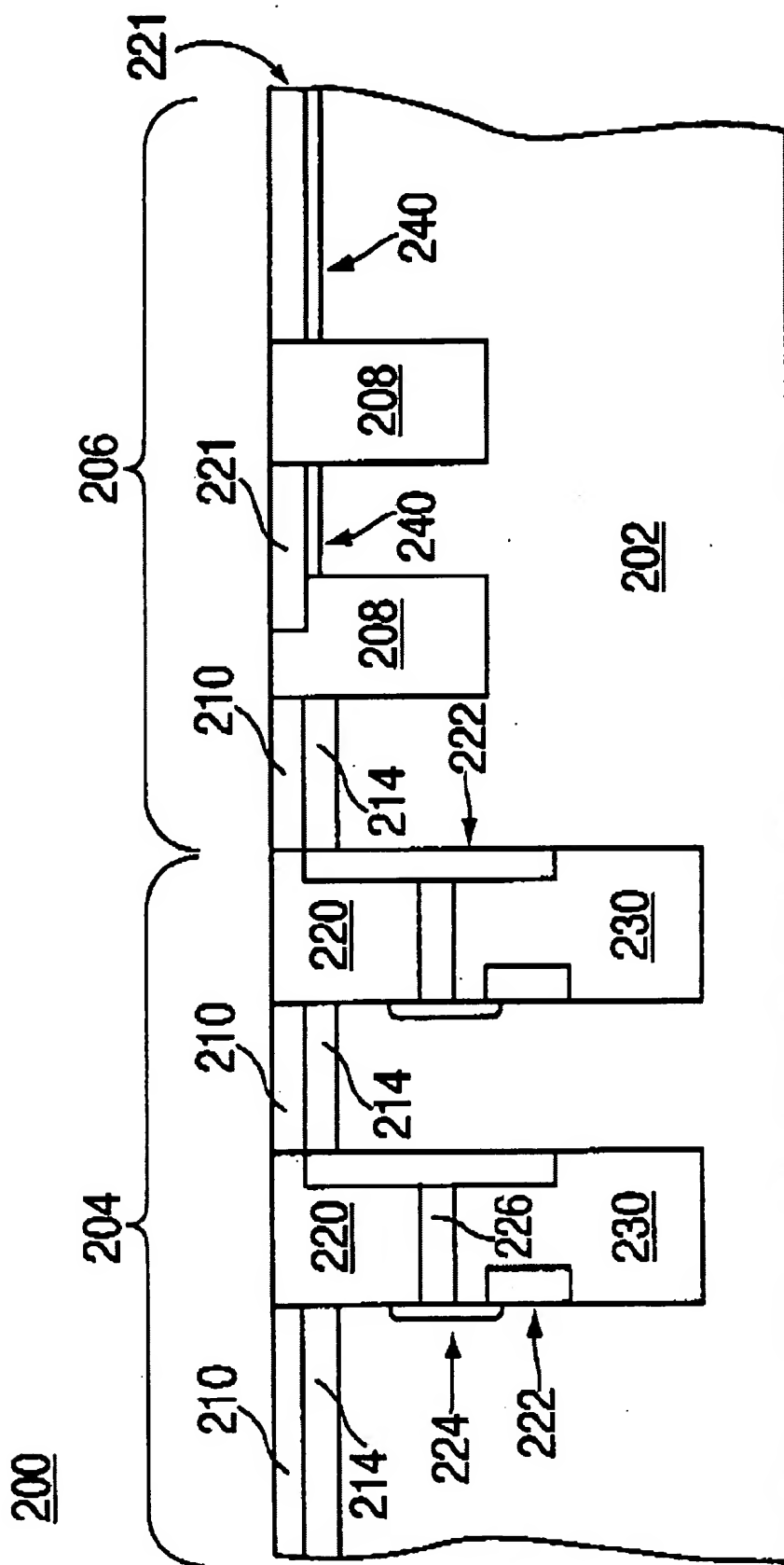


Fig. 1

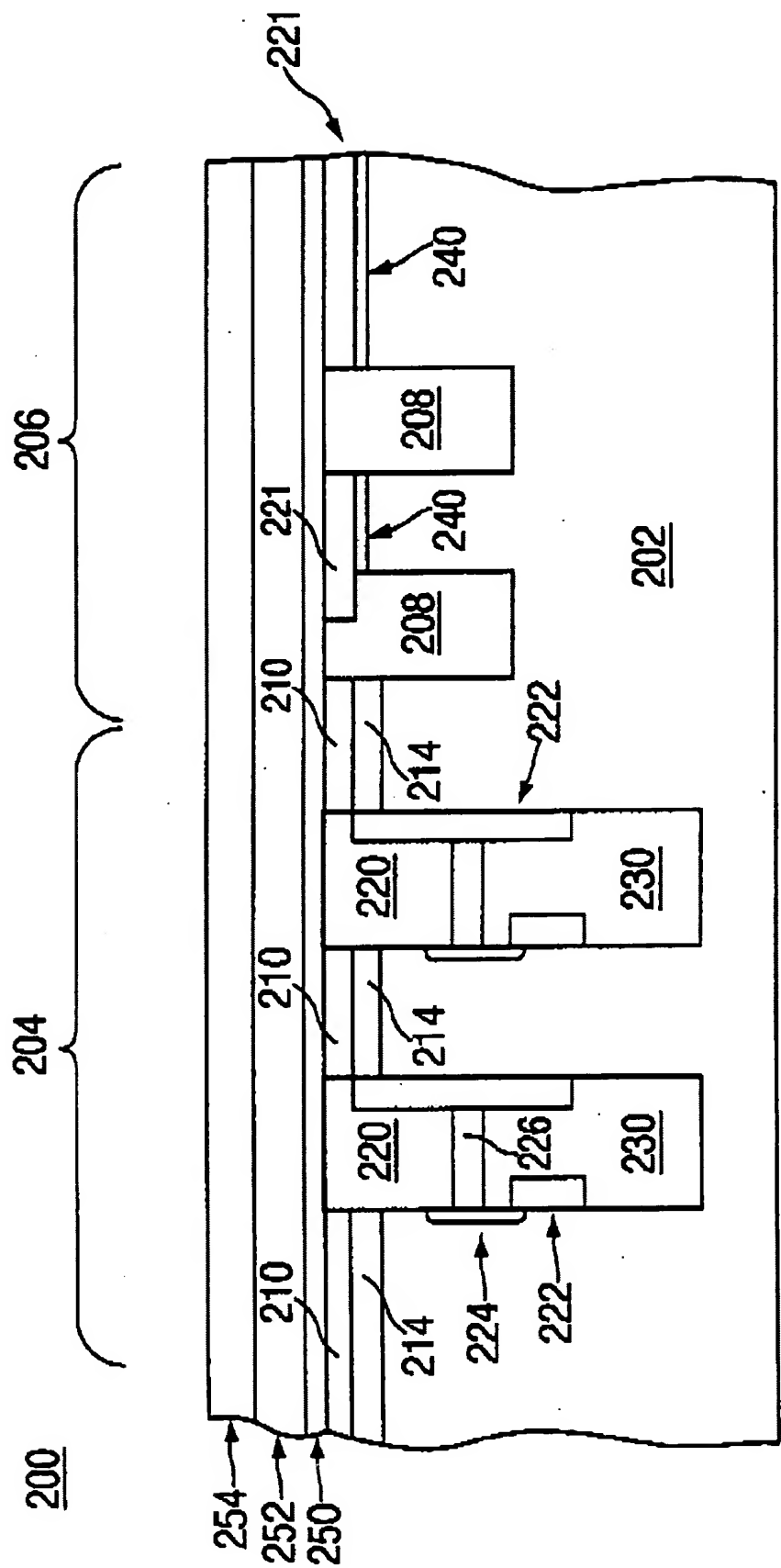


FIG. 2

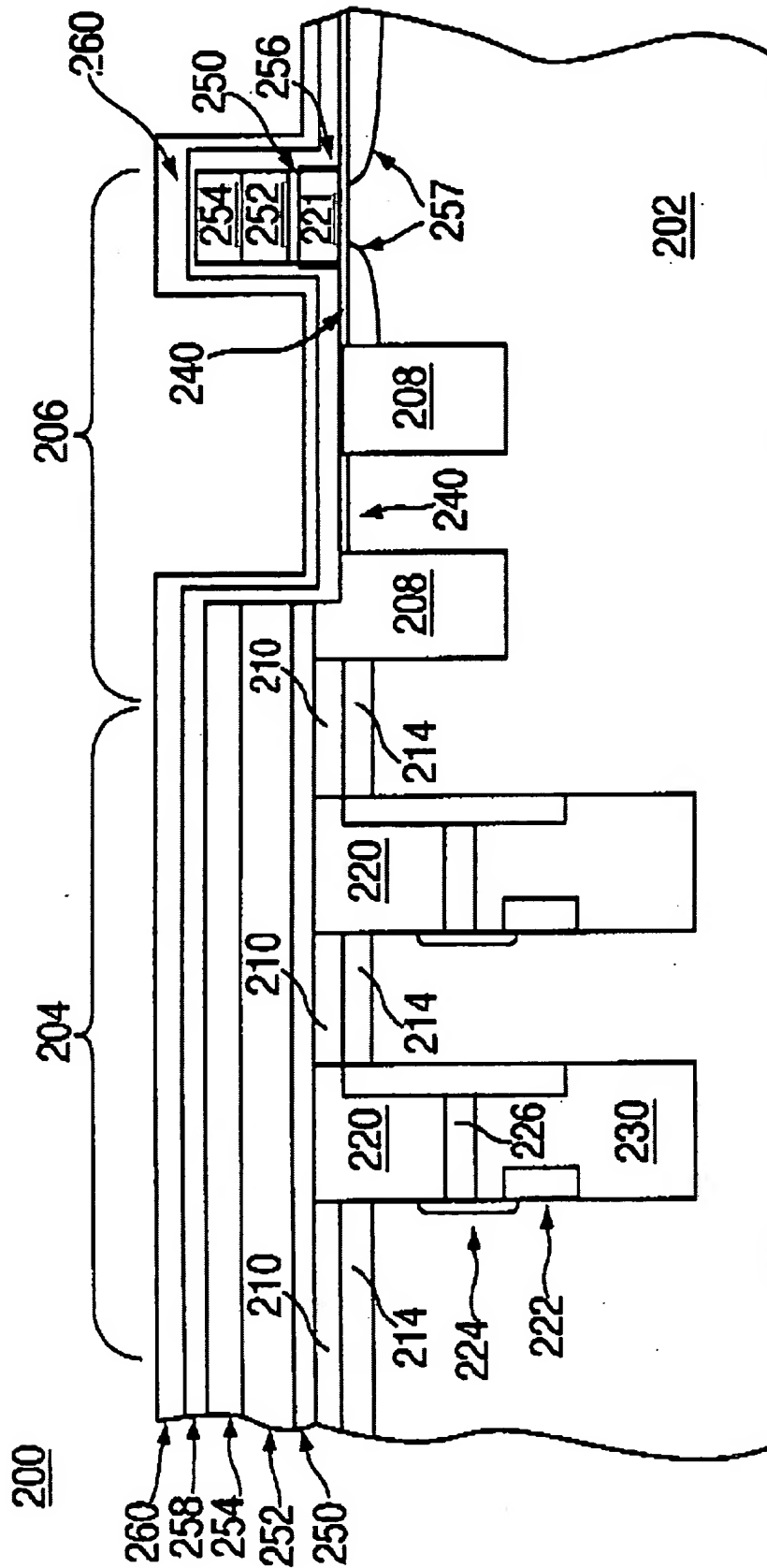


FIG. 3

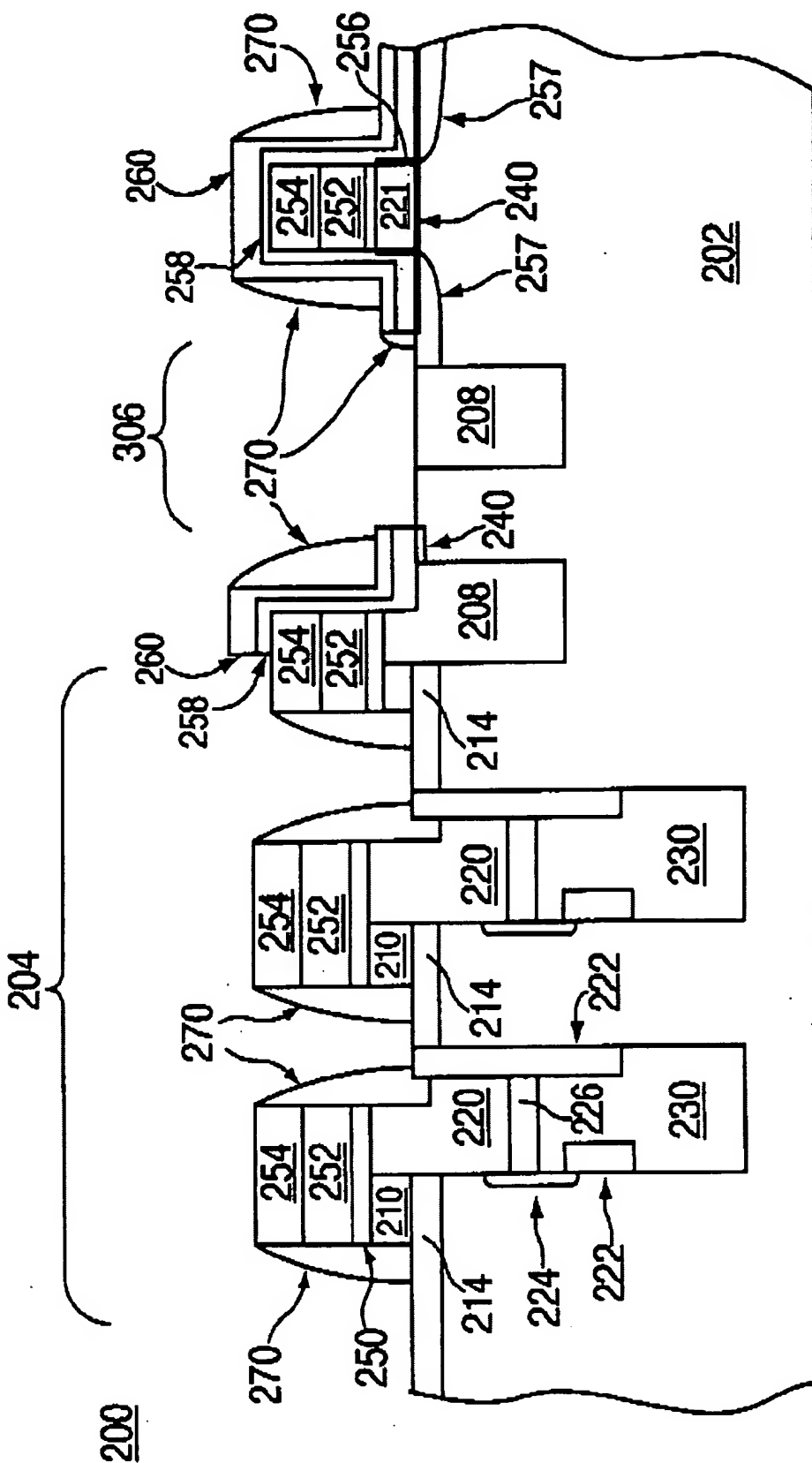


FIG. 4

Claim Rejections - 35 USC § 103

6. The following is a quotation of U.S.C. 103(a) which form the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. To expedite the prosecution of the case, the Examiner assume the Applicant will amend claim 15 or provide clarification on this claim to overcome the objection by the examiner.

8. Claims 15,16,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Divakaruni et al. (US patent 6,429,068) in view of further remark.

REGARDING CLAIM 15

Divakaruni discloses (the abstract, fig 1,fig 2, fig 3, fig 4) all the invention except for going into detail about fabricating the second conducting layer capacitor plate from undoped polysilicon.. This feature, however, is considered obvious since the use of undoped polysilicon as capacitor plate is old and well known in the art as evidenced by the disclosure by Sandhu et al. (US patent 6,124,607) column 4 lines 18-21 or Reinberg et al. (US patent 5,142,438) column 2 lines12-15.

A person skilled in the art at the time the invention was made would be able to use the teachings by Divakaruni and his own routine design skill and come up with the invention of

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claim 15 without any special teachings for the purpose of improving the process of making DRAM.

REGARDING CLAIM 16

Divakaruni discloses (the abstract, fig 1,fig 2, fig 3, fig 4) all the invention except for going into detail about the detail of formation of the second conductive layer has to be within a temperature range of 600 degree C to 800 degree C.

This feature, however is considered obvious since it has been held that when the general condition of a claim is disclosed in the prior art, discovering the optimum value or workable range involves only routine skill in the art.

REGARDING CLAIM 17

Divakaruni (the abstract, fig 1,fig 2, fig 3, fig 4,) discloses all the invention including a composite metal silicide /metal conductor (column 8 line 47-48) except for going into detail about the formation of the metal silicide layer using annealing. This feature, however, is considered obvious because the formation of silicide metal from the metal layer is old and well known in the art as evidenced by the disclosure by Divakaruni et al (US patent 6,458,646) (column 5 lines 35-45).

A person skilled in the art at the time the invention was made would have been able from using the by Divakaruni and his own ordinary design skill and come up with the inventions of claim 17 without any special teachings.

ALLOWABLE SUBJECT MATTER

9. Claims 9-12 are allowable.

Claim are allowable since the prior fails to teach a method for reducing migration of impurity atoms between two gates structure of DRAM device that has all the step as recited in claim 9.

10. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and the page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

11. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to be abandoned (see M.P.E.P. 710.02(b)).

CONCLUSION

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on Monday-Friday 9:00am-6:00pm.

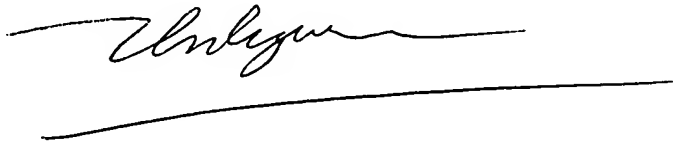
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached at 571-272-1787.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval [PAIR] system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thinh T. Nguyen

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A handwritten signature in black ink, appearing to read 'Thinh T. Nguyen', is written over a horizontal line.